

Application Serial No.: 09/928,437  
Reply to Office Action dated November 19, 2003

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-8, 10, and 13-21 are presently active in this case, Claims 1, 8, and 10 having been amended and Claims 19-21 having been added by way of the present Amendment. Claims 9, 11, and 12 have been canceled without prejudice or disclaimer from the present application.

In the outstanding Official Action, the drawings were objected to under 37 CFR 1.83(a). The Applicants note that amended Claim 1 no longer contains the language referred to in the drawing objection. Accordingly, the Applicants request the withdrawal of the objection to the drawings.

Claims 1-11 and 13-16 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Official Action indicates that the specification lacks an adequate written description for both at least one steam reformation catalyst and at least one water gas shift reaction catalyst on the inside of the tubes. While this rejection is now moot due to the deletion of this language from Claim 1, the Applicants nonetheless traverse this assertion. The Applicants respectfully submit that the specification provides disclosure for such a configuration on page 20 of the originally filed application. Lines 15-23, of page 20, state describe a preferred catalyst as a catalyst to promote steam reformation of hydrocarbons, and a second preferred catalyst as a catalyst to promote the water gas shift reaction to convert carbon monoxide and steam into carbon dioxide and hydrogen. The specification then goes onto state that “[m]ore than one type of catalyst may be employed in the tube bundle.”

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Claim 8 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 has been amended to remove the phrase "said means for holding said tubes." Accordingly, the Applicants request the withdrawal of the indefiniteness rejection.

Claims 1, 2, 8-11, 13, 15, and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cizmer et al. (U.S. Patent No. 5,362,454) in view of Barratt et al. (U.S. Patent No. 3,942,482). Claims 3-6 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cizmer et al. in view of Barratt et al. and further in view of Gebhardt (U.S. Patent No. 1,841,528). Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over Cizmer et al. in view of Barratt et al. and further in view of Gebhardt and further in view of Uggerby (U.S. Patent No. 2,595,822). For the reasons discussed below, the Applicants request the withdrawal of the obviousness rejections.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the reference (or references when combined) must teach or suggest all of the claim limitations. The Applicants submit that a *prima facie* case of obviousness cannot be established in the present case because the references, either taken singularly or in combination, do not teach or suggest all of the claim limitations.

Claim 1 of the present application recites a heat exchange reactor comprising at least one tube bundle comprising a plurality of tubes arranged substantially parallel to a common longitudinal axis and within an external pressure housing, at least one baffle oriented

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substantially perpendicular to the longitudinal axis and disposed about the bundle and configured as a manifold to control a flow of the second fluid, and at least one layer of interior thermal cement-bound refractory insulation disposed between the bundle and the housing and in fluid communication with the second fluid. Claim 1 further recites that the insulation comprises a load-bearing zone configured to support an average compressive load of at least one pound per square inch and a non-load bearing zone configured to support an average compressive load of less than one pound per square inch. (See, e.g., page 10, line 9, through page 11, line 18, of the specification for support.)

The Cizmer et al. reference and the Barratt et al. reference are cited against Claim 1 of the present application. Neither the Cizmer et al. reference, nor the Barratt et al. reference disclose insulation that includes a load-bearing zone and a non-load bearing zone as recited in Claim 1 of the present application.

The Cizmer et al. reference describes an invention that provides a support structure that removes any load from the refractory. (See, e.g., the Abstract.) Thus, a load-bearing refractory is not needed. The Cizmer does not discuss insulation having different zones defined by the load-bearing capacity thereof.

The Applicants further submit that the Barratt et al. reference also does not disclose insulation that includes a load-bearing zone and a non-load bearing zone, as recited in Claim 1 of the present application. The Barratt et al. reference does not discuss or even suggest having different zones defined by the load-bearing capacity thereof.

Accordingly, as neither of the cited reference teaches, either singularly or in combination, a heat exchange reactor as recited in Claim 1, the Applicant respectfully request the withdrawal of the obviousness rejection of Claim 1.

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Claims 2-8, 10, and 13-16 are considered allowable for the reasons advanced for Claim 1 from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed, taught, nor suggested by the applied references when those features are considered within the context of Claim 1.

Newly added Claims 19-21 are considered allowable as they recite features of the invention that are neither disclosed nor suggested by the references of record. The references of record do not disclose or suggest a heat exchange reactor as recited in Claim 1 where the insulation is made from a first material in the load-bearing zone and a second material in the non-load bearing zone, and where the first material is different from the second material. (See, e.g., page 10, line 9, through page 11, line 2, of the specification for support for Claim 19.) The specification provides support for new Claims 20 and 21 in the drawings and the written description, for example, on page 12, line 17, through page 13, line 18.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

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